

CLAIM AMENDMENTS

Claim 1. (Currently Amended): A solenoid fluid control valve, comprising:

a fluid control body adapted for being received in a fluid housing, said fluid control body including a central cavity, and having a pressure supply passage connected to said control body and a pressure control passage in said control cavity;

a feed supply tube having an outer diameter positioned in said central cavity, said and including an inner bore operably connected to said pressure supply passage, said feed supply tube being supported in said central cavity of said fluid control body by way of a radially and axially extending wall, said wall having a plurality of longitudinally extending flow chambers in communication with said pressure control passage, said feed supply tube including a valve receiving area;

a valve seat portion being made of a metallic material and press fit into valve receiving area, said valve seat portion including a valve seat and a passage in communication between said valve seat and said pressure control passage;

a valve contained in said valve receiving area operable to selectively close off communication between said pressure supply passage and said pressure control passage; and

a solenoid wherein solenoid has a moveable actuator rod contacting an armature, wherein said actuator rod has a tapered surface adjacent said armature that reduces flux shorting and improves operating characteristics for opening said valve in response to a signal.

Claim 2. (Currently Amended): The invention according to claim 1, wherein said solenoid includes a central axis and has a coil wound around a bobbin, spaced from and positioned around said central axis, said coil having radially stepped radial inner diameters and said armature is axially moveable within said bobbin.

Claim 3. (Original): The invention according to claim 2, further comprising a casing member for attaching said solenoid to said fluid control body; a portion of said casing member extending into the stepped portion of said coil for forming a flux tube therein.

Claim 4. (Currently Amended): The invention according to claim 3, further comprising an armature axially movable within ~~[[said]]~~ a bobbin.

Claim 5. (Original): The invention according to claim 4, further comprising a pole piece assembly adjacent said armature and interposed between said bobbin and said fluid control body.

Claim 6. (Cancelled):

Claim 7. (Previously Presented): The invention according to claim 1, further comprising a passageway extending through said feed supply tube and said plurality of said longitudinally extending flow chambers are operably connected at a first end to said passageway and at a second end to said pressure control passage.

Claim 8. (Original): The invention according to claim 1, wherein said valve is a ball valve.

Claim 9. (Original): The invention according to claim 5, wherein said pole piece assembly includes a stamped flux washer member and a press-fit valve seat member.

Claim 10. (Previously Presented): The invention according to claim 2, wherein said bobbin and said coil are over molded in an integral unit with a connector member.

Claim 11. (Original): The invention according to claim 4, wherein a cage is formed for retaining the armature therein.

Claim 12. (Original): The invention according to claim 1, wherein said fluid control body is made of a polymer material.

Claim 13. (Original): The invention according to claim 1, wherein said fluid control body has an upper radially extending lip member and at least one axially protruding positioning rib extending therefrom.

Claim 14. (Canceled)

Claim 15. (Currently Amended): A solenoid fluid control valve, comprising:
a fluid control body adapted for being received in a fluid housing, said fluid control body including a central cavity, and having a pressure supply passage connected to said control body and a control passage in said central cavity;

a feed supply tube positioned in said central cavity, said feed supply tube including an outer diameter positioned in said central cavity including an inner bore operably connected to said pressure supply passage, said feed supply tube being supported in said central cavity of said fluid control body by way of a radially and axially extending wall, said wall being segmented into a plurality of longitudinally extending flow chambers in communication with said pressure control passage, said feed supply tube including a valve receiving area;

a valve seat portion being made of a metallic material and press fit into said valve receiving area, said valve seat portion including a valve seat and a passage in communication between said valve seat and said pressure control passage;

a valve contained in said valve receiving area operable to selectively close off communication between said pressure supply passage and said pressure control passage;

a solenoid for opening said valve in response to a signal, wherein said solenoid includes a central axis and has a coil wound around a bobbin, spaced from and positioned around said central axis, said coil having radially stepped radial inner diameters;

a casing member for attaching said solenoid to said fluid control body; a portion of said casing member extending into the stepped portion of said coil for forming a flux tube therein; [[and]]

an armature axially movable within said bobbin; and

an actuator rod contacting said armature, wherein said actuator rod has a tapered surface adjacent said armature that reduces flux shorting and improves operating characteristics.

Claim 16. (Original): The invention according to claim 15, further comprising a pole piece assembly adjacent said armature and interposed between said bobbin and said fluid control body.

Claim 17. (Canceled):

Claim 18. (Previously Presented): The invention according to claim 15, further comprising a passageway extending through said feed supply tube and said plurality of said longitudinally extending flow chambers are operably connected at a first end to said passageway and at a second end to said pressure control passage.

Claim 19. (Original): The invention according to claim 15, wherein said valve is a ball valve.

Claim 20. (Original): The invention according to claim 16, wherein said pole piece assembly includes a stamped flux washer member and a press-fit valve seat member.

Claim 21. (Previously Presented): The invention according to claim 15, wherein said bobbin and said coil are over molded in an integral unit with a connector member.

Claim 22. (Original): The invention according to claim 15, wherein a cage is formed for retaining the armature therein.

Claim 23. (Original): The invention according to claim 15, wherein said fluid control body is made of a polymer material.

Claim 24. (Original): The invention according to claim 15, wherein said fluid control body has an upper radially extending lip member and at least one axially protruding positioning rib extending therefrom.

Claim 25. (Canceled)

Claim 26. (Previously Presented): A solenoid fluid control valve, comprising:

a fluid control body adapted for being received in a fluid housing, said fluid control body including a central cavity, and having a pressure supply passage connected to said control body and a control passage in said central cavity;

a feed supply tube positioned in said central cavity, said feed supply tube including an outer diameter positioned in said central cavity , and including an inner bore operably connected to said pressure supply passage, said feed supply tube being supported in said central cavity of said fluid control body by way of a radially and axially extending wall, said wall being segmented into a plurality of longitudinally extending flow chambers in communication with said pressure control passage, said feed supply tube including a valve receiving area;

a valve seat portion being made of a metallic material and press fit into said valve receiving area, said valve seat portion including a valve seat and a passage in communication between said valve seat and said pressure control passage;

a valve contained in said valve receiving area operable to selectively close off communication between said pressure supply passage and said pressure control passage;

a solenoid for opening said valve in response to a signal, wherein said solenoid includes a central axis and has a coil wound around a bobbin, spaced from and positioned around said central axis, said coil having radially stepped radial inner diameters;

a casing member for attaching said solenoid to said fluid control body; a portion of said casing member extending into the stepped portion of said coil for forming a flux tube therein;

an armature axially movable within said bobbin;

a pole piece assembly adjacent said armature and interposed between said bobbin and said fluid control body; and

a control rod extending along said central axis and through said pole piece assembly for opening of said valve, said control rod including a tapered end.

Claim 27. (Previously Presented): The invention according to claim 26, further comprising a passageway extending through said feed supply tube and said plurality of said longitudinally extending flow chambers are operably connected at a first end to said passageway and at a second end to said pressure control passage.

Claim 28. (Original): The invention according to claim 26, wherein said valve is a ball valve.

Claim 29. (Original): The invention according to claim 26, wherein said pole piece assembly includes a stamped flux washer member and a press-fit valve seat member.

Claim 30. (Previously Presented): The invention according to claim 26, wherein said bobbin and said coil are over molded in an integral unit with a connector member.

Claim 31. (Original): The invention according to claim 26, wherein a cage is formed for retaining the armature therein.

Claim 32. (Original): The invention according to claim 26, wherein said fluid control body is made of a polymer material.

Claim 33. (Original): The invention according to claim 26, wherein said fluid control body has an upper radially extending lip member and at least one axially protruding positioning rib extending therefrom.

Claims 34 - 36. (Canceled)

Claim 37. (Previously Presented)The invention according to claim 26 wherein said tapered end of said control rod contacts said armature and reduces flux shorting and improves operating characteristics.